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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,276	01/17/2007	Stephen Bernard Streater	BKYZ 200111US01	1949

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EXAMINER	
KIM, HEE-YONG	
ART UNIT	PAPER NUMBER
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,276	STREATER, STEPHEN BERNARD	
	Examiner	Art Unit	
	HEE-YONG KIM	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Streater (US 2003/0,156,651) (hereafter reference as Streater).

Regarding **claim 1**, Streater discloses Method for Reducing Code Artifacts in a Block Coded Video Signals. Specifically Streater discloses A method of compressing digital data comprising the steps of:

(i) reading digital data (video image frame, paragraph 10) as series of binary coded words (series of binary coded words, paragraph 10) representing a context (pixels, paragraph 11) and a codeword (codewords, paragraph 11) to be compressed;

(ii) calculating distribution output data (distribution of codewords, paragraph 76) for the input data and assigning variable length codewords (Huffman compressed, paragraph 94, optimal codewords, newly calculated codewords for each section of video, paragraph 76) to the result; and

(iii) periodically recalculating the codewords (newly calculated codewords for each section of video, paragraph 76) in accordance with a predetermined schedule, in order to continuously update the codewords and their lengths.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 2-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Streater in view of Wang (US 2003/0,169,816) (hereafter referenced as Wang).

Regarding **claim 2**, Streater discloses everything clamed as applied above (see claim 2). However Streater fails to disclose in which the codewords are recalculated each time the number of codewords has doubled.

In the analogous field of endeavor, Wang discloses Adaptive Universal Variable Length Codeword Coding for Digital Video Contents. Wang specifically discloses that VLC table can be updated (*codewords are recalculated*) once there is a significant change in the probability distribution of an event (paragraph 45) . It was obvious to consider doubling number of codewords as the indication of significant change in the probability distribution of codewords, because doubling number of codewords tells that VLC codes does not fit anymore to current status of video.

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater by specifically providing updating VLC table when the number of codewords has doubled, in order to best serve

a particular (video) application. The Streater digital video compression, incorporating the Wang updating VLC table when the number of codewords has doubled, has all the features of claim 2.

Regarding **claim 3**, Streater discloses everything clamed as applied above (see claim 1). However Streater fails to disclose in which the codewords are recalculated for every new frame of data.

Wang specifically discloses in which the codewords are recalculated for every new frame of data (Updated UVLC table can be frame-by-frame, paragraph 45), in order to best serve a particular (video) application (paragraph 45).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater by specifically providing updating VLC table for each frame by recalculating codewords, in order to best serve a particular (video) application. The Streater digital video compression, incorporating the Wang updating VLC table for each frame, has all the features of claim 3.

5. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Streater in view of Schwartz (5,717,394) (hereafter referenced as Schwartz).

Regarding **claim 4**, Streater discloses everything clamed as applied above (see claim 1). However Streater fails to disclose in which some codeword space is reserved at each recalculation so as to allow successive new codewords to be assigned for data of lower frequency.

In the analogous field of endeavor, Schwartz discloses Method and Apparatus for Encoding and Decoding Data. Schwartz discloses in which some codeword space is reserved at each recalculation (last space in a buffer is reserved, col.42, line 59-65), so as to allow successive new codewords to be assigned for data of lower frequency (new code words are placed, col.42, line 59-65), .

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater by specifically providing reserved codeword space for successive new codewords, in order to assign new codeword. The Streater digital video compression, incorporating the Schwartz reserved codeword space for successive new codewords, has all the features of claim 4.

6. **Claims 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Streater in view of Wang, and further in view of Schwartz.

Regarding **claim 7**, Streater and Wang discloses everything clamed as applied above (see claim 2). However Streater fails to disclose in which some codeword space is reserved at each recalculation so as to allow successive new codewords to be assigned for data of lower frequency.

Schwartz discloses in which some codeword space is reserved at each recalculation (last space in a buffer is reserved, col.42, line 59-65), so as to allow successive new codewords to be assigned for data of lower frequency (new code words are placed, col.42, line 59-65).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater and Wang by specifically providing reserved codeword space for successive new codewords, in order to assign new codeword. The Streater digital video compression, incorporating the Wang updating VLC table when the number of codewords has doubled, further incorporating the Schwartz reserved codeword space for successive new codewords, has all the features of claim 7.

Regarding **claim 8**, Streater and Wang discloses everything clamed as applied above (see claim 3). However Streater fails to disclose in which some codeword space is reserved at each recalculation so as to allow successive new codewords to be assigned for data of lower frequency.

Schwartz discloses in which some codeword space is reserved at each recalculation (last space in a buffer is reserved, col.42, line 59-65), so as to allow successive new codewords to be assigned for data of lower frequency (new code words are placed, col.42, line 59-65).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater and Wang by specifically providing reserved codeword space for successive new codewords, in order to assign new codeword. The Streater digital video compression, incorporating the Wang updating VLC table for each frame, further incorporating the Schwartz reserved codeword space for successive new codewords, has all the features of claim 8.

7. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Streater (US 6,195,128) (hereafter referenced as Streater-B), in view of Streater, further in view of Lee (US 5,757,382) (hereafter referenced as Lee).

Regarding **claim 5**, Streater-B discloses A method of processing digital video information (Fig.1) so as to compress it for transmission or storage, said method comprising:

reading digital data (reading digital data, col.1, line 31) representing individual picture elements (pixels) (pixels, col.1, line 32) of a video frame as a series of binary coded words (series of binary coded words, col.1, line 33);

establishing a reduced number of possible luminance values (2 Y values, col.11, line 48-54) for each block of pixels (typically no more than four);

carrying out an encoding process (approximated by one of the possible codeword, col.10, line 35-36) so as to derive from the words representing individual pixels (masks), further words describing blocks or groups of pixels (gaps) each described as a single derived word which at least includes a representation of the luminance of a block component (represent 64 pixels in the superblock, col.10, line 22) of at least eight by eight individual pixels (super-block) (superblock representing 8x8 blocks of pixels, col.10, line 16-17);

establishing a reduced number (one or two Y values for all 2x2 block, col.7, line 54-60) of possible luminance values for each smaller block of pixels (typically no more than four) ;

carrying out an encoding process (Type 102 Compression, col. 8,, line 8- 51) so as to

derive from the words representing individual pixels (luminance for each-mini-block is stored as YYYYyyyyffff, col.8, line 18-19), further words describing blocks or groups of pixels (gaps between updated mini-blocks, col.8, line 23-24) each described as a single derived word which at least includes a representation of the luminance of a block component of typically two by two individual pixels (mini-block) (two by two pixel mini-block, col.8, line 16-17);

establishing a reduced number (one or two Y values for all 2x2 block, col.7, line 54-60) of possible luminance values for each block of pixels (typically one or two);

providing a series of changeable stored masks (which of y or Y to use, col.7, line 59) as a means for indicating which of the possible luminance values are to be used in determining the appropriate luminance value of each pixel for display; and

using variable length codewords (variable length code words, col.8, line 24) to represent the result of transitions (gaps, col.8, line 23).

However Streater-B fails to disclose segmenting the image into regions of locally relatively similar pixels and locally relatively distinct pixels;

comparing and evaluating the words representing corresponding portions of one frame with another frame or frames in a predetermined sequential order of the elements making up the groups to detect differences and hence changes; identifying any of the masks which require updating to reflect such differences and choosing a fresh mask as the most appropriate to represent such differences and storing the fresh mask or mask for transmission or storage;

using context which will be available the time of decompression to encode the masks,

the changes in Y values (luminance), U values (chrominance), and V values (chrominance) and the spatial or temporal gaps between changed blocks, combined with the efficient encoding scheme, to give an efficient compressed real time representation of the video.

Streater discloses comparing and evaluating the words representing corresponding portions of one frame with another frame (comparing an devaluating the words representing corresponding one frame with another, paragraph 25) or frames in a predetermined sequential order of the elements making up the groups to detect differences and hence changes (in a predetermined sequential order..., paragraph 129);

identifying any of the masks which require updating (identifying any of the masks which requires updating, paragraph 26) to reflect such differences and choosing a fresh mask (fresh mask, paragraph 26) as the most appropriate to represent such differences and storing the fresh mask or mask for transmission or storage (paragraph 26);

using context (depending on their content, paragraph 72) which will be available the time of decompression to encode the masks (mask can be compressed in a variety of ways, paragraph 72), the changes in Y values (luminance), U values (chrominance), and V values (chrominance) (Y, U, V change, paragraph 98-107) and the spatial or temporal gaps (spatial and temporal gaps, paragraph 128-130) between changed blocks, combined with the efficient encoding scheme (codeword, 0, 01,001 for gaps 0,1,2, paragraph 131), in order to do more efficient compression coding (paragraph 128).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater by specifically providing encoding temporal and spatial gaps and the mask and change in Y,U,V, and updating mask, in order to do more efficient compression coding. The Streater-B digital video compression, incorporating the Streater encoding temporal and spatial gaps and the mask and change in Y,U,V, and updating mask, has all the features of claim 5 except segmenting the image into regions of locally relatively similar pixels and locally relatively distinct pixels.

In the analogous field of endeavor, Lee discloses Apparatus for Tracking Contours of Segmented Regions. Lee specifically discloses segmenting the image into regions of locally relatively similar pixels and locally relatively distinct pixels (image is segmented into regions of constant grey level, col.1, line 30-38), in order to do low bi-rate encoding (col.1, line 26-29).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater-B and Streater by specifically providing segmenting image into regions where blocks are generated and encoded afterward, in order to do low bi-rate encoding. The Streater-B digital video compression, incorporating the Streater encoding temporal and spatial gaps and the mask and change in Y,U,V, and updating mask, further incorporating the Lee segmenting image into regions where blocks are generated and encoded afterward, has all the features of claim 5.

Regarding **claim 6**, the Streater-B digital video compression, incorporating the Streater encoding temporal and spatial gaps and the mask and change in Y,U,V, and updating mask, further incorporating the Lee segmenting image into regions where blocks are generated and encoded afterward, as applied to claim 6, discloses in which the method further comprises an adaptive learning process (Streater-B: Learning, pp.17, line 40-pp.19, line 17) for deriving a relationship between contextual information and codewords requiring compression, and a process for dynamically

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/HEE-YONG KIM/
Examiner, Art Unit 4192

/Andy S. Rao/
Primary Examiner, Art Unit 2621
July 15, 2010